August 13, 1991

Memorandum

To: Pat Van Leeuwen, Reg.V EPA

From: Renate Kimbrough

Subject: Environmental Sampling in Madison County.

Pursuant to our telephone conversation I am a listing for you a number of items which you may wish to consider for the environmental sampling protocol. I have already sent you some information on the collection of the dust samples and the analysis of indoor and outdoor paint.

The persons that were recommended to me by Alex Fishburg are Jim Dikroeger of Netco in Springfield, Illinois (217-793-8411) or George Houghland in Scottsburg, Indiana (812-752-2931).

Dust.

As far as the dust samples are concerned I would prefer if the areas sampled could be enlarged over what is proposed in the Cincinnati protocol as I suggested in my previous write up.

Soil.

As I understand it Region VII is analyzing the soil samples by acid digestion and a graphite furnace.

The collection of soil samples is not quite clear to me. I would prefer the following:

Collect soil samples with a coring device from the top one inch of soil. If grass or other cover is present the collection should occur below the roots. A composite soil sample should be collected from the 4 sides of the house, three subsamples from each side of the house at a distance of at least two feet to three feet from the exterior wall of the house. In addition a composite sample should be collected from any bare spots in the yard and from specific play areas. All of these soil samples should then be combined into a single composite sample as I

understand the Region VII protocol. I have no problems with that approach. An alternative approach would be to analyze the soil samples from the play areas separately. However, that may generate too many samples. As I understand it, the 250 micron soil fraction and the fraction between 250 micron and 2 mm will be analyzed separately. The rest of the sample will not be analyzed. I would like to obtain a weight on the total dried sample the fraction of 250 microns and less and the fraction of 2 mm and below. I would also prefer that the fraction of soil below 250 microns be obtained from the fraction that has already been passed through a 2 mm sieve.

Finally, a drawing of the yard should be made on which the soil collection sites are indicated.

Data reporting, numbering of samples.

When we collect the blood specimens and administer the questionnaire we will ask for permission to obtain environmental samples. We would also like to set up appointments for the environmental samplers and coordinate this activity with our study. We would then tell the sample takers when they should proceed to a house. We would give the sample takers a house I.D. number and an address as well as a name. However, the address and the name are confidential and should not appear on any data forms and tapes that are developed.

Only the house I.D. number which we have previously assigned should be used as the linking number between the environmental data and the laboratory data.

If EPA uses the same consecutive numbers for the different environmental samples then the type of sample and the analytical results of these samples should also be indicated by letters:
S for soil
W for water
D for dust
P for paint
The data should be supplied on a 3 1/2 inch diskette of high density as a standard ASCE file. The variables should be separated by commas. If there are no valid zeros, then blanks are missing.
For further information about the form in which the data should be reported please contact Maurice LeVois 415-435-3646.

Water

I assume that 125 ml of water will be collected and if possible the 0.63 ml of concentrated doubly distilled nitric acid will be added each day in the field office after all samples have been collected.

III. ENVIRONMENTAL SAMPLE COLLECTION

Preparation for the environmental sample collection begins at the field office. The environmental team will be given an assignment for the morning or the entire day. Once the assignment is received, the environmental team members will check the accuracy and completeness of the data on each environmental sample form. The Dwelling ID Number and other identifying information should be on all the environmental forms.

The environmental team will then calibrate the Paint XRF instruments (Princeton Gamma-Tech XK-2 or XK-3). Both the Princeton Gamma-Tech XK-2 and the XK-3 instruments will be used. Both instruments operate on the same principle. The newer model, the XK-3 is capable of reading only to a maximum of 10 mg Pb/sq.cm. Paint in the older housing may have higher concentrations of lead, thus, when monitoring teams visit older housing, i.e., those built before 1940, the XK-2 should be used.

After the necessary calibration of equipment, the environmental monitoring team should make certain that all equipment and supplies are ready for use (see checklist).

All members of the team should wear appropriate identification. All members should be introduced to the residents along with a short explanation of the monitoring process (see Attachment).

Exterior and interior samples will be collected. The interior samples and information to be collected is as follows:

1) Collection of tap water samples.
2) Sketching a floor plan of the residence.
3) Collection of interior surface dust samples.
4) Water system evaluation.
5) Screening for lead in painted surfaces; walls and trim, avoiding metal doors outlets, etc.
6) Collection of soil samples.

1. INTERIOR SURFACE DUST

Interior surface dust is collected by using a Hoover brush vacuum cleaner 1/3 HP, 2 Amp motor S-1083-100. At each collection a coffee filter will be fitted into the dust collection area.

The interior surface dust sample will consist of a composite of at least three sub-samples taken from the following areas in the residence:

1) An area adjacent to the main entrance.
2) A floor area in the room most-utilized by the subject child.
3) A floor area in the child's bedroom.

Additional sub-samples should be added to the composite sample, for example, from window sills which are accessible to children.

The main entry sample is collected from the floor close to the entry door. The entry mostly used by the family should be used. The identification of sample sites from the most frequently occupied room and the child's bedroom will be determined partly by the floor covering present in those rooms. If the floor is carpeted, an adequate sample can readily be collected from almost any pathway in the room. A pathway might consist of an area immediately inside of a doorway into the room or an obvious pathway from one side of the room to the other. In rooms where there is no carpeting, the most likely place to find an adequate supply of surface dust would be an area immediately adjacent to a wall. For each floor surface a one meter square area should be vacuumed.

The dust sample is collected by vacuuming the area three times. The first collection should cover the entire area completely, vacuuming back and forth in one direction. The collector should then turn 90 degrees and vacuum the entire area once again. Finally, the third collection should be taken from the original position.

As each sub-sample is collected, its location should be indicated on the floor plan which was completed earlier. Care should be taken to note the total number of the areas sampled. At the completion of the sample collection, the coffee filter will be removed from the collection device, folded and secured in a sample container. The dwelling ID number and the sample number should be written on the side of the filter paper and the outside label of the container.

2. WATER SAMPLE COLLECTION

To be added later

3. LEAD PAINT SCREENING

The first step in the survey of lead paint in the residence is the calibration check of the instrument. For both instruments it is necessary to make calibration readings prior to taking any readings in the residence and to record those calibration readings on the paint survey form. Three separate readings will be made on the standards provided with the instruments. For calibrating the XK-2, readings should be taken with the high-lead standard, the zero-lead standard, and the 2.99 mg Pb/sq cm paint standard. The XK-3 is checked by using the zero-lead and the 1.50 mg Pb/sq cm standards. All calibration information should be added to the FORM 07 XRF Lead Paint Screening work sheet.

Two surfaces, painted woodwork and walls, in three separate rooms of the residence will be evaluated. Unpainted surfaces, such as paneling, wallpaper and unpainted woodwork will not be screened.

The three most frequently occupied rooms or areas of the residence will be screened. These areas will very likely be the living room or family room, the kitchen, and the subject child's bedroom. If these rooms are unpainted, then other alternative rooms will be selected.

In order to characterize the paint and surfaces in a given room, at least one painted wall and one painted trim in the room (door or window sill) should be screened. When screening the woodwork, three separate readings will be taken at three different locations on the woodwork. A similar procedure will be used for screening painted walls within a room. One reading will be taken on each of three separate wall areas, either on the same wall or on different walls within a room. If all walls are painted the same color, then the three readings can be taken from one wall. If the walls are painted different colors, then a reading from the different colored walls should be included. The mean of the three readings should be recorded for each room.

At the completion of the interior paint screening, the exterior painted surfaces should be screened. Three separate areas on the outside of the structure should be screened for lead. As with the interior screening, unpainted surfaces should not be considered. The selection of areas to be screened should be based upon: (1) apparent differences in the color and/or age of paint, (2) the apparent condition of the paint, (3) differences in surfaces, for example, painted walls vs. trim. The locations of all paint XRF readings should be noted on the sketches completed by the monitoring team or teams. All XRF readings should be recorded on the forms entitled lead paint screening.

In addition to the paint lead screening, the environmental monitors will make an evaluation of the condition of painted surfaces. This evaluation will be a rating scale of 1 to 4:

1) Intact
2) Slightly Peeling
3) Moderate Peeling
4) Extremely Deteriorated

4. SOIL SAMPLING

To be added later